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# AIDS in Haiti: a bibliometric analysis

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**Objectives:** In Haiti, AIDS has become the leading cause of death in sexually active adults. Increasingly, AIDS has become a disease of women and children. Previous bibliometric studies have shown the emergence of Haiti as a leading country in the production of AIDS literature in the Latin American and Caribbean regions. No information exists, however, regarding the type of publications produced, the collaboration patterns used, or the subject content analysis of this production. The purpose of this study was to gain insight into the construction of this literature production.

**Methods:** A bibliometric analysis regarding Haitian AIDS research was conducted in the AIDSLINE database for the period 1980 to 1998. An attempt was made to identify the patterns of the growth in AIDS literature, as well as the types of documents published, authorship, institutional affiliations of authors, and subject content.

**Results:** Results indicated that most documents were published in periodicals. *The International Conference on AIDS* obtained the highest frequency. The United States, Haiti, and Canada were the main productive countries.

**Conclusions:** While nearly 40% of the records corresponded to ethnology-related articles, HIV infections, sex behavior, pregnancy, and substance-related disorders headed the Medical Subject Headings (MeSH) found. Main aspects of AIDS papers focused on epidemiology, complications, and trends issues.

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## INTRODUCTION

Statistics collected by the Pan American Health Organization have shown that Haiti has among the highest mortality rates in Latin America and the Caribbean. In 1990, the crude death rate was estimated at thirteen per 1,000, much higher than the Latin American rate of seven per 1,000 [1]. Haiti was one of the first countries where AIDS was recognized, a burden that led to the stigmatization of an entire nation, resulting in serious long-term economic, social, and psychological consequences [2]. While the first cases of AIDS were reported to the medical community on June 5, 1981 [3], the first case of AIDS in Haiti was hospitalized in 1979 [4]. By December 1990, a total of 3,086 cases had been reported [5]. By 1991, AIDS in Haiti was the leading cause of death in sexually active adults and had increasingly become a disease among women and children [6, 7]. Indeed, AIDS in Haiti has threatened to

reverse the decrease in infant mortality achieved during the 1980s [8]. The HIV seroprevalence in the early 1990s was 10% in urban areas and 5% in rural areas [9]. In 1992, patients infected with HIV occupied 60% of urban Haitian hospital beds [10]. Currently, AIDS in Haiti is known, but not understood [11].

The growth rate of AIDS literature has been reported as exponential in nature [12–14]. The amount of languages and countries incorporated in this literature production has also increased significantly. This increase has motivated some researchers to conduct bibliometric studies. According to Young [15], bibliometrics is the “analysis of a body of literature to reveal the historical development of subject fields and patterns of authorship, publication, and use.”

Several bibliometric studies have been published on AIDS. These studies have evolved from descriptive, quantitative analyses of AIDS literature [16, 17], to more qualitative subject and citation analyses. The

findings obtained from these studies have provided a general picture of the history and growth of AIDS literature from the unsettled nature of the terminology during the early 1980s [18], to a more structured and controlled Medical Subject Headings (MeSH) terminology [19, 20]. Through citation studies, clusters of topics representing networks and maps of AIDS have been obtained [21], and leading institutions and scientists have also been identified [22].

The United Nations against AIDS (UNAIDS) estimates that every day 16,000 people become infected with HIV, 90% in the developing world [23]. Most bibliometric studies, however, have been conducted to analyze the AIDS literature production situation in developed countries. AIDS literature generated in or about less developed countries is not only of less interest to developed countries, as reported by Horton [24], but is less visible and less available internationally.

In a previous bibliometric study regarding AIDS in Latin America and the Caribbean, Macias-Chapula et al. [25] raised the following questions: Who has been conducting AIDS research in Latin America and the Caribbean? Where has this research been conducted? What has been the contribution of Latin America and the Caribbean to the world AIDS literature? After a review of the international literature, it was found that Latin America and the Caribbean contributed approximately 1% of the production. The Caribbean was a relevant AIDS literature producing region. Haiti alone had the highest frequency within the Latin American and Caribbean regions.

## PURPOSE

Preliminary results of a bibliometric analysis of AIDS literature produced in Haiti are reported with the aim of providing insight into the construction and administration of AIDS knowledge in this country. The ultimate aim was to provide data for use in research, health planning, policy analysis, and information centers regarding AIDS in the Caribbean and Latin American regions.

## METHOD

A literature search in the AIDSLINE database was performed to retrieve all the records indexed to HIV/AIDS and Haiti. AIDSLINE is the National Library of Medicine's (NLM) database, containing references to the published literature on HIV infections and acquired immune deficiency syndrome (AIDS). It focuses on the biomedical, epidemiological, health care administration, oncologic, and social and behavioural sciences' literature. The file contains over 150,000 citations to journal articles, monographs, meeting

abstracts and papers, government reports theses, and newspapers articles from 1980 to the present.

Other databases covering AIDS in Latin America and the Caribbean such as: (1) LILACS (The Pan American Health Organization's—supported database on Latin American and the Caribbean Literature in the Health Sciences) and (2) PERIODICA (The National University of Mexico's Latin American Literature on Sciences) were not searched because they were less current and less comprehensive in terms of geographic coverage [26].

The AIDSLINE search was conducted via the Internet Grateful Med interface, limited to a 1980 to June 1998 period. Only records indexed with the MeSH term "Haiti" were selected. Records with the text word Haiti at the title or abstract fields alone were excluded.

Records were analyzed to identify the distribution of the following indicators:

- type of document—the distribution of original contributions in journal articles, conferences, editorials, books, etc.: obtained from the source field
- language of the publication: obtained from the language field
- authorship—identification of the number of collaborating authors in a publication: obtained from the author field
- year of publication: obtained from the source field
- country of publication: obtained from the corporate source field
- institutional affiliation: obtained from the corporate source field, when available
- MeSH terms used: obtained from the Medical Headings field.

For the MeSH terms used, check tags, such as human, animal, male, female, age descriptors, etc., except pregnancy, were excluded. Apart from Haiti, MeSH terms for countries were not considered. When subheadings were assigned to a MeSH term, these were identified and tabulated to obtain a more specific subject content analysis of the literature.

## RESULTS

Of the total of 443 records retrieved, 363 (81.94%) were indexed with the MeSH term "Haiti." The other 80 (18.06%) records contained the term Haiti as a free-text word in the title or abstract fields only. For the purpose of this study, only the former 363 records indexed with the MeSH term were analyzed.

### Production

No records were found for the period 1980 to 1981 and only one record was retrieved for 1982. An analysis by five-year overlapping periods revealed the 1983 to 1987 period to be the most productive (155 records).

**Table 1**  
Distribution of AIDS records by five year overlapping periods\*

Years	Number of records
1983–1987	155
1984–1988	114
1985–1989	120
1986–1990	111
1987–1991	119
1988–1992	123
1989–1993	134
1990–1994	112
1991–1995	97
1992–1996	94
1993–1997	81

\* Records from the years 1982 (one record) and 1998 (three records) were excluded.

A decrease in production was observed after the period 1990 to 1994. Table 1 shows this distribution.

### Language of publication

The following language distribution of the articles was found: English, 336 (92.56%); French, 14 (03.86%); Spanish, 4 (01.10%); Portuguese, 1 (00.28%); and other languages, 8 (02.20%).

### Authorship

Over 75% of the publications were coauthored. Table 2 provides a distribution of the number of authors per publication.

### Types of documents

Most of the documents (306) were journal articles. Forty-seven were comments or letters to the editor; four were editorials; three were news; and three were books. A total of 124 periodical titles was found. *International Conference on AIDS* was the most frequent title, with 110 postings, followed by the *New England Journal of Medicine* (19), *Journal of the American Medical Association* (15), *Annals of Internal Medicine* (14), *Lancet* (12), and *Annals of the New York Academy of Science* (7). These six periodicals covered nearly 50% of the total production.

**Table 2**  
Distribution of the number of authors per publication

Number of authors	Number of publications	%
Anonymous	11	3.03
1	72	19.83
2–5	153	42.15
6–10	116	31.96
10–15	11	3.03
Total	363	100

**Table 3**  
Participating countries (obtained from the corporate fields of 186 records)

Country	Number of records
United States	99
Haiti	52
Canada	19
France	4
Bahamas	3
Dominican Republic	2
Belgium	2
Cote d'Ivoire	1
French Guyana	1
Mexico	1
Senegal	1
United Kingdom	1
Total	186

### Countries

Only 186 (51.24%) records included a corporate source. This amount allowed for only a partial analysis of the literature produced by institutions and countries. Overall, twelve countries were identified. Countries with the highest frequency were the United States, Haiti, and Canada, with ninety-nine, fifty-two, and nineteen postings, respectively. Table 3 provides a list of all the countries found.

### Institutions

United States institutions formed the majority of institutional contributors (34). These institutions contributed ninety-nine records. Cornell University Medical College, in New York, obtained the highest frequency with eighteen records; followed by Johns Hopkins University, in Baltimore, Maryland, with seventeen. Table 4 provides a list of the main United States institutions found.

The Centres pour le Developpement de la Sante (CDS) at Port au Prince was the Haitian institution that obtained the highest frequency, with twenty-two records, followed by the Groupe Haitien d'Etude du Sar-

**Table 4**  
United States institutions

Institution	Number of records
Cornell University Medical College, New York	18
Johns Hopkins University, Baltimore, Maryland	17
Centers for Disease Control and Prevention, Atlanta, Georgia	9
State University of New York, New York	7
National Institutes of Health, Bethesda, Maryland	6
University of Miami, Florida	6
Harvard Medical School, Boston, Massachusetts	4
University of North Carolina at Chapel Hill, North Carolina	4
Boston University School of Medicine, Boston, Massachusetts	3
Other (one record each)	25
Total	99

**Table 5**  
Haitian institutions

Institutions	Number of records
Centres pour le Developpement de la Sante (CDS)	22
Groupe Haitien d'Etude du Sarcoma de Kaposi et des Infections Opportunistes (GHESKIO)	9
Hopital Albert Schweitzer, Deschapelles	7
PSI DABACO	4
National AIDS Committee, Ministry of Public Health	2
Clinique Bon Sauveur, Cange	1
Centre Medical de Port au Prince	1
CARE PWR	1
Grace's Children Hospital, Port au Prince	1
Red Cross	1
Institut National de Laboratoire et de la Recherche	1
Programme National de Lutte Contre le SIDA	1
Laboratoire d'Investigations Biologiques	1
Total	52

coma de Kaposi et des Infections Opportunistes (GHESKIO), with nine. Table 5 provides a list of all of the Haitian institutions identified.

In Canada, the Montreal General Hospital (the Centre for AIDS Studies, the Department of Community Health, the Department of Epidemiology, and the Department of Obstetrics and Gynecology) contributed fourteen of the nineteen publications found.

### MeSH terms

The total number of MeSH terms was 657. Acquired immunodeficiency syndrome obtained the highest frequency with 233 postings, followed by HIV infections (94) and homosexuality (77). Table 6 provides a list of the main MeSH terms found in ranking order.

### Subheadings

An analysis of the subheadings—as assigned to the descriptors “Haiti,” “Acquired Immunodeficiency Syndrome,” and “HIV Infections”—revealed the following results: 363 records indexed with the descriptor Haiti were also indexed with the subheadings ethnology (144 records) and epidemiology (69 records). One hundred fifty-two records (41.64%) were assigned no subheadings and two articles were indexed with both ethnology and epidemiology subheadings. Two hundred thirty-three records indexed with the descriptor acquired immunodeficiency syndrome were also indexed with the subheadings epidemiology (106 records), complications (62 records), and trends (62 records). As for the remaining subheadings, each had fewer postings. For example, immunology (40 records), prevention and control (29 records), mortality (27 records), and diagnosis (20 records). Ninety-four records indexed with the descriptor HIV infections were also indexed with the subheadings epidemiology (44 rec-

**Table 6**  
MeSH terms in ranking order

Rank	MeSH term	Number of records
1	Acquired Immunodeficiency Syndrome	233
2	HIV Infections	94
3	Homosexuality	77
4	Risk Factors	62
5	Sex Behavior	53
6	HIV Seropositivity	42
7	Risk	41
8	HIV-1	40
8	Pregnancy	40
8	Substance-Related Disorders	40
9	HIV Seroprevalence	32
9	Sarcoma, Kaposi	32
10	Comparative Study	30
10	Hemophilia	30
11	Case Report	29
12	Pregnancy Complications, Infectious	27
13	Blood Transfusion	26
14	Sexually Transmitted Diseases	23
15	Tuberculosis	22
15	Tuberculosis, Pulmonary	22
16	HIV Antibodies	21
17	Emigration and Immigration	20
17	Pneumonia, Pneumocystis Carinii	20
18	Health Education	19
18	Sexual Partners	19
19	Urban Population	18
20	HTLV-BLV Viruses	17
21	Antibodies, Viral	16
22	Enzyme-Linked Immunoabsorbent Assay	15
22	HTLV-1 Infections	15
22	Prevalence	15
23	AIDS-Related Opportunistic Infections	14
23	Developing Countries	14
23	Knowledge, Attitudes, Practice	14
23	T-Lymphocytes	14
24	Rural Population	13
24	Toxoplasmosis	13
25	Epidemiologic Methods	12
25	Opportunistic Infections	12
25	Substance Abuse, Intravenous	12
26	Blotting Western	11
26	Incidence	11
26	Sex Factors	11
26	Socioeconomic Factors	11
27	Antitubercular Agents	10
27	Cohort Studies	10
27	HTLV-1 Antibodies	10
27	Syphilis	10
27	Time Factors	10
28	Other (608)	9†

† Nine or less, each.

ords), trends (28 records), and complications (20 records). These subheadings were the most used.

### CONCLUSION

The emergence of Haiti as an important country for AIDS literature was first reported in 1992 by Bierbaum [27]. A bibliometric study regarding AIDS in Latin America and the Caribbean for the period 1980 to 1996 found that while Haiti was the most productive country in the region, such productivity decreased notably in the late 1980s and early 1990s [28]. This study found



the emergence of Haiti maintained during the 1983 to 1987 period only.

An overall analysis of the results found in this study is summarized as follows: A high pattern of coauthorship was found. Over 77% of the articles were published in collaboration among two or more authors. Most of the articles were published in periodicals (84.29%). *International Conference on AIDS* was the leading publication with 110 postings (30.55%). This publication alone became a relevant source for information retrieval in the field.

Only 51.24% of the records included a corporate source. An analysis of these records revealed that the main participating authors were from the United States (99), Haiti (52), and Canada (19). The main participating institutions were the Centres pour le Développement de la Santé, Haiti (22 records); Cornell University Medical College, New York (18); Johns Hopkins University, Baltimore (17); and Montreal General Hospital, Canada (14). A further analysis of the relationship between coauthorship and subject content is needed to identify specific links of collaboration among countries and institutions.

The general picture of the MeSH terms distribution showed a similar pattern to what has been reported internationally [29]. The exceptions found were the emergence of highly ranked terms such as HIV infections (rank 2), sex behavior (rank 5), HIV-1 (rank 8), pregnancy (rank 8), and substance-related disorders (rank 8). A further analysis to identify the distribution of MeSH terms by year is needed. This pattern would be important because the rise, fall, and disappearance of terms over the years could be analyzed. Descriptors such as "pregnancy complications, infectious" (rank 12); "sexually transmitted diseases" (rank 14); and "tuberculosis" (rank 15) could be monitored to alert researchers and policy decision makers.

The MeSH term "Homosexuality" ranked third, after acquired immunodeficiency syndrome and HIV infections. This finding was surprising because previous studies have found that, in Haiti, more than 90% of patients with AIDS were infected with HIV by heterosexual intercourse [30, 31]; heterosexual intercourse has been identified in publications as the predominant mode of HIV transmission worldwide [32, 33]; and the work conducted by Bierbaum et al. [34] revealed the declining use of this descriptor, internationally, over time. A specific analysis of the documents indexed to homosexuality needs to be conducted in order to understand this finding.

Nearly 40% of the records indexed to Haiti were also indexed to the subheading ethnology. These articles referred mainly to Haitian-born AIDS patients living in Canada or the United States. This finding might explain the high rank of United States and Canadian institutions working in the field. The rest of the rec-

ords (60%) were related to either general or epidemiology issues.

The subheadings assigned to the MeSH terms acquired immunodeficiency syndrome and HIV infections corresponded mainly to epidemiology, complications, and trends issues. Less used were subheadings such as prevention and control, diagnosis, or etiology. This finding alone suggests the type of research that is needed. Clearly, a switch from epidemiological research to action taking, such as prevention and control issues, is needed. The absence of local data, however, seems to be a major obstacle for rational strategic decision making in HIV prevention efforts [35].

Comparison analyses of AIDS literature production in Haiti with other Latin American and Caribbean countries—like Brazil, Mexico, and Argentina—need to be conducted in order to obtain a more complete regional picture of the situation. These analyses will provide further support to AIDS researchers, health policy analysts, and librarians or information officers in the Caribbean and Latin American regions.

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